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ARTICLE

Person-centered Health Coaching in a Scottish Prison Population: Findings at Training Completion

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Abstract

Introduction: People in Scottish prisons (PSP) have poorer health than the general population. The promotion of health and wellbeing in prisons is a central aim of Scottish Government policy.

Objective: This study was aimed at designing, implementing and evaluating person-centered health coaching (HC) training to improve PSP´s health and related psycho-social skills.

Methods: PSP were trained as health coaches, as part of National Health Service (NHS) Scotland's oral health prison intervention, termed Mouth Matters (MMs). A unit of MM involving HC is named PEPSCOT. Here PSP were trained by a qualified coach over a three-month period to become health coaches; 8, 4 and 4 whole day training took place respectively during the first, second, third month of training. Self-assessment questionnaires and diaries were used before, during and after the HC training to test the extent to which HC works to improve PSP´s health and related psycho-social variables. The outcome measures analyzed in the present study were self-assessed health and behaviors, self-efficacy, self-esteem, depressed mood, and usefulness of the program. Follow-up data will be collected in September 2016 for further assessment of the impact of HC.

Results: The baseline data showed that the majority of the participants were from low socio-economic status, and reported a moderate level of health. Data showed later that when compared with baseline levels two of the outcome variables (self-esteem and self-efficacy) improved significantly ($p<0.001$) at the mid-training point, and that all four outcome variables (also including self-assessed health and depressed mood) improved significantly (at least $p<0.05$) at the completion of training. Participants' positive evaluation of the training was significantly correlated with improved health and psychological measures ($p<0.05$).

Conclusions: Health Coaching training represents a new person-centered approach that appears to enhance self-assessed health, depressed mood, self-esteem and self-efficacy among prisoners in Scotland, and also to enable transitions from negative to positive concerning beliefs, values, and self-evaluations. There is however a need for further studies at a larger scale.

Keywords

Health coaching, person-centered approach, oral health, prisons, health promoting prisons, WHO, health and behavior, psychological measures, mood, self-esteem, self-efficacy, people in prison

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Introduction

The World Health Organization (WHO) global strategy on people-centered and integrated health services (PCHS) presents a compelling vision for 2020 in which all people would have access to health services that are provided in a way that responds to their preferences (1).

PCHS is an approach to health-care and also a social innovation that consciously adopts the perspectives of individuals, families and communities, and sees them as participants as well as beneficiaries of health systems that respond to their needs and preferences in humane and holistic ways. It requires that people have the education, support and skills they need to make decisions and participate in their own care (1).

People-centered health-care approach in prisons

The Health Promoting Prisons (HPP) project began in 1995 in the WHO EURO region, in view of the recognition of inequality between public health and prison health. It is based on the "healthy settings approach" which draws on:

- prison policies that promote health;
- a prison environment that is supportive of health;
- health promotion initiatives specific to individual prisons (2).

The "settings approach" has its root within WHO Health for All Strategy and more specifically within the Ottawa Charter for Health Promotion (3), a move towards a more holistic model of health (4). It has the following pillars:

- Build Healthy Public Policy,
- Create Supportive Environments,
- Strengthen Community Actions,
- Develop Personal Skills,
- Reorient Health Services (3)

The PCHS strategy proposes five strategic directions for re-orientation of health-care services to become more people-centered: 1. Empowering and engaging people, 2. Strengthening governance and accountability, 3. Reorienting the model of care, 4. Coordinating services, 5. Creating an enabling environment. It can be referred as both PCHS and a healthy settings approach. Their roots go back to the Ottawa Charter.

Health promoting prisons may be understood as a PCHS setting, in line with the Advocacy Declaration for Care Act 2014, UK Department of Health, which states: "Local authorities must involve people in decisions made about them and their care and support... People should be active partners in the key care and support processes of assessment, care and support planning... No matter how complex a person's needs, local authorities are required to involve people, to help them express their wishes and feelings, to support them to make their own decisions. The duty to involve applies in all settings, including for those people living in the community, in care homes or in prisons,…" (5).

However, the question of how key features within the PCHS strategy such as shared-decision making, empowerment, free choice and control, can be applied in prison settings still remains a challenge. For example, mental health promotion in prison is considered as an intervention often targeted to coping with existing mental health problems or illnesses as opposed to promoting positive mental health and well-being (6,7). Initiatives launched often remain reactionary and individualistic, not addressing the upstream approach (prevention and positive health promotion) (6).

How do we get there?

WHO suggested the need for alternative approaches for health-promoting prisons. They stated that an intervention in the prison setting must include the creation of a supportive environment, capacity-building, the delivery of disease prevention, and specific health promotion initiatives tailored to the prison environment that would address the individual's health needs and health expectations and be positive health oriented. The requirement for an evidence-based approach using behavioral strategies such as, motivational interviewing is apparent (8). Nonetheless, suggestions for alternative interventions should speak for a collaborative partnership among prison officers, academia and prisoners, in line with WHO proposals (9).

PEP-SCOT-as a co-approach to integrate PCHS in prison settings

In Scottish prisons, the promotion of health and well-being is guided by the 'Framework for Improving the Health of Scottish Prisoners' (FPHP). The FPHP is grounded in a 'whole prison' or 'health settings approach' to create a supportive environment for health improvement, capacity building and personal skills to promote health (8, 10, 11). As part of such movement, oral health promotion interventions have taken place within prisons and young offender institutions. Despite this forward looking work, the results of these oral health interventions have been disappointing in terms of health behavior change. The question remained of how to put in place an intervention that would promote oral and general health, improve health literacy and would also assist ex-offenders with regard to their eventual re-integration in the community. While this seemed a tall order, a study in the United States suggested that health coaching could assist in 'the transition from prison to community'(12). WHO (13) recommended to create a supportive environment through the improvement of health capacity building skills, literacy and empowerment provided by PCHS-focused health promotion interventions (for example, using motivational interviewing to help people adopt healthier behaviors). However, studies and projects focusing on these particular aspects have been neglected. Health coaching in the present project (PEPSCOT) can be a complementary approach to meet this need, considering the successful outcomes among people with diabetes type 2 obtained in an international study by this author and colleagues (14, 15).

PEP-SCOT is the sixth unit of NHS Health Scotland's oral health intervention termed Mouth Matters (16). It is a health coaching training program to improve health, health behaviors, self-efficacy and capacity building skills of prisoners. Health Coaching (HC) can be defined as a behavioral intervention that facilitates participants in establishing and attaining health-promoting goals in order to change lifestyle-related behaviors, with the intent of reducing health risks, improving self-management of chronic conditions, and increasing health-related quality of life (17).

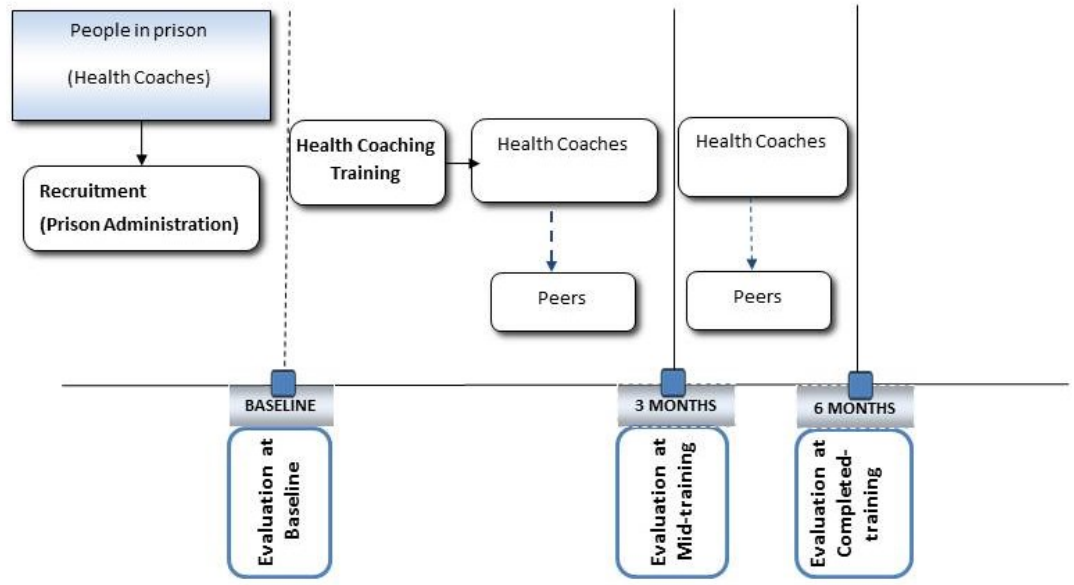
Objectives

The aim of the present study is to assess the effectiveness of HC training for people in prisons and residential officers. The specific objectives are the following:

1. To assist participants to adopt healthier lifestyles and maintain them.
2. To improve health learning capacity and adopt new cognitive and psycho-social skills to assist others.

3. To promote a continuous learn-act-grow health cycle.
4. To improve self-esteem and self-efficacy to allow increased satisfaction with one-self.
5. To train participants as peer health coaches for others.
6. To make recommendations to integrate HC training in prison settings.

Figure 1. Flow diagram of Health Coaching training and evaluations.



Methods

1. Health Coaching Training

A central thrust of the 6-month HC training involves training participants (prisoners) as health coaches. The content and structure of the HC training is linked to the International Coaching Standards (International Coaching Community) which has been used as international training for patients with diabetes type 2 (2010-2015) (14,15) and follows the Scottish Vocational Qualifications. This intends to provide all participants with qualifications integral to preparation for eventual re-insertion in the community.

All participants (n=6) were trained over a 3-month period using a participative approach starting in February 2016 (Figure 1). Throughout the training period, each health coach candidate has coached at least two peers during a 3 month training program and a 3-month follow-up. Each participant completed reflective log-books and diaries. The author of the present study, AB Cinar (ABC), who is a qualified and registered health coach, provided training and supervision, 1-to-1 support and feedback to the health coaches, during the 3 months of training. Supervision support would continue 3 months after the completion of training.

2. Focus, Format and Content of Training

The present HC training program has been developed by AB Cinar based on the original (International Coaching Community) Coaching (18). It was launched initially as a training course for undergraduate dental students (2011-2014).in collaboration with Master Coach C. Dinesen, Danish Coaching Institute.

2.1. Focus: The program with the focus to strengthen the coach and the client partnership brings the participants knowledge and theory for presenting and demonstrating methods and techniques, and sharing experiences and examples. The training refers to a practical and “down to earth approach” to coach clients through their transition in order to transform current behaviors into constructive routines and sustainable positive behaviors that create an increased meaning and purpose of life, health and well-being.

2.2. Format: Participants experience a pragmatic, straightforward and engaging "learning by doing" training which was based on experimental learning with Knowledge-Practice-Training, in order to develop fundamental coaching skills.

HC is pragmatic and intends to promote and motivate actions through greater insight and consciousness of the patient. It represents a collaborative paradigm (asking

patients what changes they are willing to make) rather than a directive paradigm (telling patients what to do).

2.3 Content: Health Coaching has a broad philosophical base that is used in the training as follows:

- Systemic thinking (19)
- Humanistic psychology by Carl Rogers (20-23)
- Neuro-Linguistic Programming (NLP) (24)
- Autopoiesis and Cognition by Francisco Varela and Humberto Maturana (25)
- Pragmatism (26)
- Behavioral Coaching (27, 28)
- Emotional Intelligence (29)
- Motivational Interviewing (30)
- Social Cognitive Theory (31)
- Mental Training by Lars-Eric Unestahl (32)

3. Role of coaches

HC in the present training program has six principal roles:

- Getting self-awareness and empowerment of self
- Enabling self-awareness and empowerment for the client, and providing self-management support. Self-management support is essential for the clients to extend their health care into their daily lives. Coaches train the clients in seven domains of self-management support: providing information, teaching disease-specific skills, promoting healthy behaviors, imparting problem-solving skills, assisting with the emotional impact of well-being, providing regular follow up and encouraging people to be active participants in their care.
- Building trust, empathy and rapport with the client. Throughout the care process, there are plenty of opportunities for disconnects between the clinician and the patient. Health coaches can turn this disconnection to connection by serving as a "bridge model" between the client and health care system/profession by exploring together with the clients about needs and obstacles, and addressing health literacy, cultural issues and social-class barriers.
- Helping the clients navigate the health care system. Many patients, particularly people in prisons need a navigator to help locate, negotiate and engage in services. Coaches can help coordinate care and speak up for their clients when their voices are not heard .
- Offering emotional support. Coping with poor health is emotionally challenging. As trust and familiarity grow, coaches can offer emotional support and help patients discover and learn how to cope with their illnesses.
- Serving as a continuity figure. Coaches connect with their clients not only at office visits but also between visits, facilitating familiarity and consistency over time.

In order to fulfill these roles, the coach needs to have certain psycho-cognitive skills and knowledge about theory, research and practice of HC; health education and well-being; all thus to be supported by mental training (relaxation, meditation and self-management). Meeting these requirements were the focus of the present specific HC training.

4. Recruitment of the Participants

After discussions with prison management, it was decided that a convenient sample of 5 people in prison (recruited by prison managers) and 1 residential officer were invited to take part. The agreed exclusion criteria were people with severe mental health disorders or who were to be released within 3 months of the start of the feasibility study.

5. Evaluation of Health Coaching Training

The training includes 3 months interactive training and 3 months follow-up, supported by supervision of health coach AB Cinar. The evaluation of the training involves comparing baseline measures with those at the end of second (mid-term) and third month (post-intervention) training and follow-up.

The outcome measures include self-assessed questionnaires, "health coach candidate" diaries including prisoners' experiences of the training, any changes experienced in oral health and health behaviors and in values and opinions. Diaries also include coaching experiences of the participants with their peers.

6. Questionnaires

All participants were asked to complete the self-assessed questionnaires at baseline and at the end of mid-term, and post-training. That was conducted in areas free from distractions and at locations that are most suitable for participants, organized by the prison administration. The questionnaires included socio-economic status, self-reported health and health habits including oral health.

In the present study the following four variables were assessed as the primary measures for training evaluation:

a. **Health** was measured by self-reported health status by use of a scale composed of four items asking about teeth, general health, weight and quality of life through the question "In what condition do you think your …… are now?", ranging on a 5-a point Likert scale (very bad=1 to very good=5) (33). For further analysis, the mean of sum of the scores were taken.

b. The concept of **self-efficacy** plays a crucial role in the adoption, maintenance and improvement of health behaviors, as people engage in activities that they believe they can manage but avoid the ones with which they feel they cannot cope. Social Cognitive Theory (34) guided the development process of Tooth Brushing Self-efficacy (TBSE) Scale (nine items) in the present study, as earlier defined in detail (35, 36). Self-efficacy Scale was 1. to assess individual's belief in his/her competency to brush his/her teeth daily across different challenging situations by the question *"How sure are you that you can brush*

your teeth…", 2. To explore the interrelation of oral health behavior related competency with physical activity, self-assessed health and depressive mood, in line with the earlier studies (33, 35, 36). TBSE consisted of nine items on a five-point Likert scale (0='not sure at all' to 5= 'absolutely sure'). The nine items referred to beliefs concerning self-competency on toothbrushing across daily challenges (e.g. I can brush my teeth even if I am in a hurry to go to work in the morning/ I am extremely tired at night) and unexpected situations (I still can brush my teeth even when I am ill/ there are lots of interesting things to do on weekends/holidays). The design and validity-reliability evaluations of the scale have been described earlier (35, 36). For further analysis, the mean of sum of the scores was taken for the TBSE.

c. **Self-esteem**, personal judgment of an individual's worth, is derived from the reflected appraisal of others (37), and it thus has a social link. In the present study, self-esteem scale (SEC) examined these two dimensions: How participants "view themselves" in the eyes of their peers and others (e.g. "I believe my friends/others mostly say nasty things about me"), and how participants feel about themselves and their lives (e.g., "There are lots of things about myself that I would like to change"). The scale was modified from Macgregor and Balding (37). Its design and validity-reliability assessments have been described earlier (38). SEC, assessing the confidence in one's own worth or abilities, had nine items (37), each ranging on a three-point scale (agree=0 to disagree=2). For further analysis, the mean of the sum of scores was taken for the SEC.

d. **Depressed mood** was measured with a two-item scale involving the question "During the past month how often have you been bothered by ...?": 1. Feeling down, depressed 2. Little interest or pleasure doing things (39). The answers ranged on a 4-point scale from "very much= 4" to "not at all=1". For further analysis, the mean of sum of the scores was taken.

Health behaviors (smoking and physical activity) and self-evaluation of the course were assessed as secondary/process-related variables, to measure the impact of primary variables through the training:

a. Self-reported physical activity (PA) was asked by the multiple choice question "Please tick the activity that fits you best". There were four choices: "1. read, watch TV or other things in a sitting position; 2. walking, active work at least four hours per week; 3. jogging, running and other kind of running exercises 2-3 hours per week; 4. tough training, competition sport more than once a week." Responses were dichotomized as "physically inactive" and "physically active" by taking the last three categories as meaning "physically active".

b. Smoking was assessed with the question "How often do you smoke?" There were five choices: "1. every day, 2. at least once a week but not daily, 3. less than once a week, 4. not at all, 5. have quit smoking. Responses were dichotomized as "smoker" and "non-smoker" by taking the last two categories as meaming "non-smoker".

c. Evaluation of the training course was assessed by the question "How beneficial and useful has the training been" ranging on a 5-point Likert scale (not at all =1 to very useful=5). For further analysis, the mean of the sum of scores was taken.

All participants were asked to complete the same self-assessed questionnaires at baseline, mid-term and post-intervention. Three months after the post-training (September 2016), the same questionnaires will be used to assess behavioral change from baseline to follow-up.

7.Data Analysis

Statistical analyses were performed using SPSS v.17 (Chicago, Illinois). To describe the health behaviors and the societal factors, frequency distributions were used. Paired-sample *t* tests were used for normally distributed data to assess change over time. Spearman rank correlations were used to assess associations between the variables.

Small sample sizes may lead to results that do not reach the conventional level of significance- p values of less than 0.05, which may mistakenly lead researchers to accept the null hypothesis that there is no association or improvement (40). On the other hand, innovations in small sample research are particularly critical because the research questions posed in small samples often focus on serious health concerns in vulnerable populations (41). In the current study, the prisoners represent a vulnerable group and the research focuses on a major challenge among prisoners; namely how to improve health (physical, social and emotional) through increasing self-awareness and improving psycho-social capabilities by HC. There are several techniques used for analysis of data with small sample sizes (40).

Sample size calculation was based on the expected difference in self-efficacy levels between pre- and post-coaching training self-efficacy levels, according to the author's previous study (16). This previous study and its findings about the improvement/change at mean self-efficacy levels from baseline to post-intervention (16) led to the present study with a power of 0.9, $\alpha = 0.05$, effect size 0.65. Thereafter based on this criteria, the conventional "total sample size" was calculated by G*Power statistical software (42, 43) as n=35, and the number of participants (n=5) was multiplied by seven for weighting to 35. The conventional sample size (n=35) was in line with the sample sizes of previous studies assessing the psychological or behavioral impact of HC (44). However, there is no study assessing the impact of HC intervention in prisons. Sampling weighting was used as suggested from previous studies (45). Statistical significance was set at 0.05.

Results

All participants were long-term sentenced and mean imprisonment time was 6.1 years. Socio-economic and health behaviors of participants are shown on Table 1. The majority of the participants were secondary school graduates.

Table1. Socio-economic measures and health behaviors among prisoners (n=5) at baseline

Variables	N	Frequency %
Education	**5**	
Secondary school	3	60
High School	1	20
Technical school	1	20
Marital Status	**5**	
Single	4	80
Divorced or w idow	1	20
Occupation before imprisonment	**5**	
Full-time employed	3	60
Unemployed	1	20
Self-employed	1	20
Age	**5**	
≤29 years	2	40
30-39 years	2	40
40-49	1	20
Being homeless before imprisonment	**5**	
No	4	80
Yes	1	20
Accommodation before imprisonment	**5**	
Own property	2	40
Rented	2	40
With family or friends	1	20
Smoking	**5**	
No	2	40
Yes	3	60
Brushing twice a day	**5**	
No	0	100
Yes	5	0
Physical Activity	**5**	
No	2	40
Yes	3	60

The results of the evaluation at baseline, mid-training and completion of training are presented below and comparisons between these evaluation points are summarized in Table 2.

At baseline, three of the participants were smokers and two of them were physically inactive. Mean self-assessed health was 12.4 (±3.5). Participants showed moderate depressed mood and moderate self-efficacy. Participants in general reported moderate self-esteem.

At the mid-training point, one participant quitted smoking and another started physical training. Self-esteem and self-efficacy significantly improved from baseline to mid-training ($p<0.05$). There was no statistically significant improvement for self-assessed health, nor for depressed mood ($p\geq0.05$). Improvement for self-esteem was positively correlated with self-efficacy levels ($r_s=0.36$, $p<0.05$) and self-assessed health ($r_s=0.60$, $p<0.01$). Self-esteem was positively correlated with being physically active ($r_s=0.34$, $p<0.05$), having not depressed mood ($r_s=0.76$), and improvement at self-efficacy ($r_s=0.57$), ($p<0.01$). Self-efficacy was positively correlated with improvement at self-esteem ($r_s=0.36$, $p<0.05$) and positive self-assessed health ($r_s=0.67$), ($p<0.01$). Being physically active and non-smoker, positively and strongly correlated with each other ($r_s=0.82$, $p<0.01$), and were correlated with having not depressed mood (respectively, $r_s=0.68$, $r_s=0.43$, $p<0.01$).

At completion of training, four of the participants were physically active ($p<0.05$). Compared to baseline and mid-term, there was statistically significant improvement for self-assessed health 14.0 (±2.3), ($p<0.01$). Self-esteem and self-efficacy significantly improved from baseline ($p<0.01$). Improvement in self-efficacy was positively and highly correlated with improvement in physical activity ($r_s=0.82$), self-assessed health ($r_s=0.47$), and reduced depressed mood ($r_s=0.79$), ($p<0.01$). Improved self-efficacy levels were positively correlated with self-esteem ($r_s=0.41$, $p<0.05$), and physical activity ($r_s=0.56$, $p<0.01$). Reduced depressed mood was correlated with physical activity ($r_s=0.56$, $p<0.01$) and self-assessed health ($r_s=0.36$, $p<0.05$).

When compared with baseline levels, all four outcome variables (self-assessed health, depressed mood, self-efficacy, and self-esteem) improved significantly (at least $p<0.05$) at the completion of training. Also, most participants reported that the training was quite useful (Mean: 4.02 on a 5-point scale, SD: 0.40). This evaluation was positively and highly correlated with self-rated health ($r_s=0.72$), reduced depressed mood ($r_s=0.73$), and non-smoking ($r_s=0.41$), ($p<0.01$).Similar correlations were obtained between the course evaluation and the improvement of physical activity ($r_s=0.79$, $p<0.01$) and self-esteem ($r_s=0.36$, $p<0.05$).

Discussion

In general, prison populations in Europe come from sections of society with high levels of poor health and social exclusion. Prisoners tend to have poorer physical, mental and social health than the general population. Their lifestyles are more likely to put them at risk of ill health. Many prisoners have had little or no regular contact with health services before entering prison. Poor health usually gets worse in prison settings due to frequently present issues such as bullying, mobbing, and boredom (8).

There are several approaches to improve the health and well-being of prisoners. Training prisoners as peer workers and/or health trainers is an emerging top approach. There is a recent systematic review showing strong evidence that being a peer worker is associated with positive effects on health, in particular mental health and its determinants (47). Among the studies included in this review, two of them provided moderate evidence that becoming a health trainer positively affected knowledge, attitudinal and

Table 2. Change at self-reported health status and psychological variables from baseline to post-intervention among prisoners*

	BASELINE Mean (±SD)	MID-TERM Mean (±SD)	POST-TERM Mean (±SD)	P (baseline-midterm)	P (midterm-post intervention)	P (baseline-post intervention)
Self-assessed health	12.4 (±3.5)	13.0 (±3.4)	14.0(±2.3)	NS	0.001	0.001
Depressed mood	4.2 (±1.3)	3.8(±1.6)	3.8(±1.3)	NS	NS	0.006
Toothbrushing Self-Efficacy	30.4 (±4.7)	32.8 (± 4.6)	34.6 (±1.9)	0.001	0.031	0.001
Self-Esteem	12.2(±5.5)	14.6 (±6.1)	13.8(± 8.6)	0.001	NS	0.030

* The current sample size (n=5) is multiplied by seven in line with weighting sampling technique (n=35) to have the effect size 0.6, with a power of 0.9, $\alpha = 0.05$ (paired t-test), based on the effect size of health coaching training on psychological measures in our previous study (16)

NS: not significant

behavior change, self-esteem and development of transferable skills (48, 49). In line with these reports, the present study participants rated coaching training as quite useful, and this was positively correlated with self-rated health, reduced depressed mood, self-esteem and health behaviors.

The literature shows little evidence of effects on health trainers' clients. However, limited evidence showed that health trainers discussed a range of lifestyle issues with clients and referred them to other services (48, 49). Another systematic review of peer health promotion concluded that peer education could impact positively on attitudes, knowledge and behaviors of sexual health and HIV prevention, but there was little research on other health issues (50). These interviews highlighted the need for evidence-based research for peer-based interventions in prison settings. This is in line with the calling from the Health and Justice, Public Health England, for evidence-based guidelines and advice on all aspects of public health in prisons, including health promotion and public health (51). To our knowledge, there has been no implementation of a health promotion or peer health trainer program that focuses on holistically increasing self- awareness on personal resources and skills, motivation and empowerment, improving health literacy and building a goal-oriented vision. Therefore, the research presented here could be a model for further studies to assess the impact of such programs.

Another approach is using psycho-cognitive approaches to improve the general health and well-being of prisoners. However, studies in this field are scarce in number and they mostly focus on one specific health behavior. Höjdahl and his colleagues (51) found out in 2015 that an international personal-motivation based program for women serving in correctional institutions enhanced the women's coping resources and provided income alternatives to crime, which appears fundamental for desisting from criminal behavior (51). The studies using motivational approaches for smoking cessation (52, 53) and HIV prevention (54) found a significantly higher rate of behavioral changes in intervention groups compared to control groups. In line with these studies, the present research showed that HC training focusing on increasing self-awareness and improving psycho-social skills could improve health behaviors such as quitting smoking and physical activity. It is noteworthy that in the present study both of these two behaviors were correlated with reduced depressed mood, which was inter-correlated with increased self-esteem and self-efficacy levels. Research has also shown that engaging in exercise can be an effective treatment for depressed mood (55).

In the present study, improvement in physical activity was correlated highly with believing in self (self-efficacy) and moderately with reduced depressed mood. Thus self-efficacy could play a mediator role between health behavior and depressed mood. It is noteworthy that the self-efficacy measured in the present study was toothbrushing-related, which may sign a synergistic interaction between different health behaviors. This is in line with an earlier study of the present author showing that increased activity was correlated with twice daily toothbrushing, which suggests that health enhancing behaviors cluster together (46). All this may underline the need for self-empowerment focused person-centered health promotion training for people in prison, as it seems that positive health behaviors and psychological measures interact with each other holistically. Coaching could be one approach to achieve positive transformation with psycho-behavioral measures, individually tailored for each person. However, this study had a small size and there is a need for further larger studies.

Despite the significant success of psycho-cognitive approaches, a question remains on how to train prisoners to improve well-being of both themselves and their peers. A PCHS behavioral approach such as HC that initially focuses on exploring, unlocking, and activating personal resources and thereafter trains on how to use these resources to promote health for self and others can be an effective health promotion approach in prisons. The HC approach can also address the requirements of a health promoting prison approach described by WHO (8) with the following components:

- training and support in psychological skills (such as cognitive behavior, self-esteem);
- education in health and empowerment (including information about behavior, the development of decision-making skills and support in becoming more empowered);
- development of life-skills
- specific health promotion interventions (such as peer support and mentoring).

Based on the issues addressed by WHO, the current study could be an example of good practice. It seems to be the first training program in which prisoners are trained as health coaches so that they first can coach themselves and then motivate their peers to change lifestyles positively. Improvement of socio-cognitive and health literacy skills along with increasing awareness on self-resources are embedded in HC training. HC differs from other behavioral techniques in that it is a mind-set or approach rather than a specific technique. A key distinguishing feature of HC is its promoting professionals to interact with and view people as resourceful, empowered and active partners in care (43). HC focuses mainly on solutions rather than problems, and the solutions are defined by people themselves through a life-course approach. In the present study, there was a significant improvement in self-efficacy, self-esteem and depressed mood, which could point to improvement in self-competence and to transition from negative to positive regarding beliefs, values, and self-evaluations.

The baseline data of the study shows that the participants are from low socio-economic groups. The present HC training may provide new insights to how a person-centred approach can be effective among people with similar socio-economic background; thus may contribute to implement new strategies to tackle inequalities in health. In the present study, improved self-assessed health was interrelated with self-esteem, self-efficacy and health behaviors. Far more, participants' evaluation of coaching training was correlated with self-assessed health and certain psycho-behavioral measures. All these may underline the need for personal-empowerment based approaches at prisons, such as HC, individually tailored for the psycho-behavioral and health needs of people in prison.

One of the limitations of the study is its small sample size. Sampling weighting techniques were used to overcome this limitation, in line with current literature (40,41). The impact of HC approach on psychological measures such as self-efficacy was assessed at the author's previous research and the effect size based on the improvement of mean self-efficacy levels from baseline to post-intervention was taken as reference (16); there was not any other reference studies available. Besides all, prisoners compose a special vulnerable group and the findings of the study cannot be generalized. Furthermore, the present study, to our knowledge, is the first where prisoners are trained to be health coaches through international coaching training standards.

Conclusions

Prisons have access to disadvantaged groups that would normally be considered hard to reach. Prison is sometimes the only opportunity for assessing and addressing the health needs of marginal populations who have led chaotic lifestyles prior to imprisonment. HC focuses on training people to take responsibility for their health and to build-up positive self-concept through empowerment, motivation and support. Therefore HC as a pilot intervention can provide new insights on how to construct a PCHS approach in prisons, based on prisoners' needs, expectations and skills. PEP-SCOT could be a generic template in terms of active participation of a prison population in a health coaching program that enhances healthy behaviors, positive mood, self-esteem, and self-efficacy.

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Ethical approval and written permission were granted by the University of Dundee and Scottish Prison Services. These approvals were in line with the Ethics (IRB) Committee guidelines to protect human participants in the present study, involving the following steps:

1. Patient autonomy was protected by the informed consent process, whereby a researcher provided a potential participant with full disclosure about the nature of the study, the risks, benefits and alternatives, and an extended opportunity to ask questions before deciding whether or not to participate. A statement on informed consent indicated that the approached participant was free not to participate and can stop participation at any time.
2. Prison administration selected the participants; the researchers were blind to the selection process.
3. What patients say or fill in the questionnaires were not passed on to doctors, prison staff and medical staff.
4. The study data was seen only by the researchers and was not available to anybody else.

The author declares no conflicts of interest.

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